



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/582,010

10/15/2008

Lorenz Ratke

4836-000023/US/NP

1598

27572 7590 01/08/2010
HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER

WANG, CHUN CHENG

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

01/08/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,010	Applicant(s) RATKE ET AL.	
	Examiner Chun-Cheng Wang	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/30/2009 has been entered. Claim 8 was cancelled. Claims 1-7 are now pending.
2. The objections and rejections not addressed below are deemed withdrawn.
3. The text of those sections of Title 35, U.S. Code not included in this section can be found in a prior Office Action

Claim Objections

4. Claims 2-7 are objected to because of the following informalities: Use the term “carbon aerogel molded part”, to be consistent with claim 1, in line 1 of each claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that

Art Unit: 1796

the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification does not describe the newly added limitation: “the pore space between the hollow spheres is essentially completely filled by the aerogel”.

7. Claim 2 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for “said aerogel further comprises silica aerogels”, does not reasonably provide enablement for “said aerogel further comprises organic aerogels, or combinations thereof”. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The product claimed is a carbon aerogel molded part, which was pyrolyzed after drying of the organic aerogels molded part to make the final product. The organic aerogels are pyrolyzed to form carbon aerogel and would not survive the high heat and keep its organic aerogel form.

Claim Rejections - 35 USC § 103

8. Claims 1-6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Field et al. (US 20040077738) in view of Ratke et al. (Lorenz et al. in previous Office action) (EP 1077097).

The disclosure of Field and Ratke is adequately set forth in paragraphs 4 and 7 of the previous Office Action, incorporated herein by reference.

Regarding the newly added limitation “the pore space between the hollow spheres is essentially completely filled by the aerogel”: Ratke ‘097 disclose resorcinol-formaldehyde aerogel with molding sand was compressed when filling the mold (read on the pore space between the hollow spheres is essentially completely filled by the aerogel) (see Embodiment: Production of the aerogel solution).

9. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ratke et al. (EP 1077097) in view of Field et al. (US 20040077738).

Claim 1: Ratke '097 disclose resorcinol-formaldehyde aerogel with molding sand (e.g. inorganic filler) is used to make molded part by shaking and knocking compression when filling the mold (read on the pore space between the hollow spheres is essentially completely filled by the aerogel) (see Embodiment: Production of the aerogel solution) in which the plastic aerogel can be converted to carbon aerogel in vacuum or protective gas with temperature above 1000°C (e.g. pyrolysis) [0004]. The carbon aerogels have extreme small effective thermal conductivities in the order of some mW/(m·K) (read on claims 1 and 4) [0004].

Ratke '097 is silent on the inorganic hollow sphere filler.

Field et al. disclose an insulation composite comprising aerogel-hollow particle binder composition (Abstract). The insulation composite and aerogel-hollow particle binder composition can be molded to provide insulation articles such as tiles, panels, or various shaped articles ([0041]). Suitable hydrophobic aerogel particles include organic aerogel particles, such as resorcinol-formaldehyde or melamine-formaldehyde aerogel particles ([0007]). The insulation composite and aerogel-hollow particle binder composition are especially suited for applications demanding insulation that provides thermal stability, mechanical strength, and/or flexibility in the mode of application

In light of such benefits, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to utilize the composition of the hollow spheres and the resorcinol-formaldehyde aerogel to provide thermal stability, mechanical strength, and/or flexibility in the mode of application.

Claim 2: Field et al. further disclose suitable hydrophobic aerogel particles, which include resorcinol-formaldehyde aerogel particles and silica aerogels, can be combined ([0007]).

Claims 3 and 4: Field et al. further disclose suitable hollow, non-porous particles include Scotchlite™ glass microspheres, which has thermal conductivities of less than $0.1 \text{ Wm}^{-1}\text{K}^{-1}$.

Claim 5: Field et al. further disclose a ratio of hydrophobic aerogel particles to hollow, non-porous particles of about 80:20 to about 20:80 (e.g. 20-80% of hollow sphere, read on claim 5) ([0014]) (i.e. the claimed ranges “overlap or lie inside ranges disclosed by the prior art” is a prima facie case of obviousness).

Claim 6: See Field et al. Table 1.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ratke et al. (EP 1077097) in view of Field et al. (US 20040077738).

The disclosure of Ratke ‘097 and Field et al. is adequately set forth in paragraph 9 and is incorporated herein by reference. Ratke ‘097 disclose process of manufacturing carbon aerogel with molding sand (e.g. inorganic filler) molded part by: 1. producing an aerogel solution; 2. mixing the aerogel solution with molding sand and filling core mold by compressing (read on the pore space between the hollow spheres is essentially completely filled by the aerogel); 3. gelling the solution; 4. drying (see Embodiment: Production of the aerogel solution). Ratke ‘097 further disclose the plastic aerogel can be converted to carbon aerogel in vacuum or protective gas with temperature above 1000°C (e.g. pyrolysis) [0004].

Ratke ‘097 is silent on the inorganic hollow sphere filler.

Field et al. disclose an insulation composite comprising aerogel-hollow particle binder composition (Abstract). The insulation composite and aerogel-hollow particle binder

Art Unit: 1796

composition can be molded to provide insulation articles such as tiles, panels, or various shaped articles ([0041]). Suitable hydrophobic aerogel particles include organic aerogel particles, such as resorcinol-formaldehyde or melamine-formaldehyde aerogel particles ([0007]). The insulation composite and aerogel-hollow particle binder composition are especially suited for applications demanding insulation that provides thermal stability, mechanical strength, and/or flexibility in the mode of application

In light of such benefits, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to utilize the composition of the hollow spheres and the resorcinol-formaldehyde aerogel to provide thermal stability, mechanical strength, and/or flexibility in the mode of application.

Response to Arguments

11. Applicant's arguments filed on 10/30/2009 have been fully considered but they are not persuasive.

12. Regarding Applicants' argument about the newly added limitation "the pore space between the hollow spheres is essentially completely filled by the aerogel": Ratke '097 disclose process of manufacturing carbon aerogel with molding sand (e.g. inorganic filler) molded part by filling core mold by compressing (see Embodiment: Production of the aerogel solution).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Cheng Wang whose telephone number is (571)270-5459. The examiner can normally be reached on Monday to Friday w/alternate Friday off.

Art Unit: 1796

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ling-Siu Choi/
Primary Examiner, Art Unit 1796

/Chun-Cheng Wang/
Examiner, Art Unit 1796

/CCW/